Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!
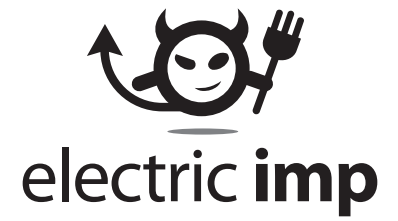

Contact us

specification: imp001

version 20130611

1. Product description

1.1 General description

The imp is a complete wireless network node in a module. It is available both in a memory card form-factor (imp001) and in a solder-down module form-factor (imp002). It works in conjunction with the imp service to allow easy connection of any device to the internet.

One of the big advantages of having WiFi inside an user-removable card is all the wireless regulatory approvals happen at the card level. This relieves the need for wireless regulator certification at the product level.

1.2 Features

- 802.11 b/g/n WiFi
  - 20MHz 11n channels, 1 x 1
  - +16.75dBm max output power (802.11b)
  - -97dBm typical sensitivity (1Mbps)
  - Integrated antenna with 2.5dBi max gain
- 32-bit Cortex M3 processor
  - Robust embedded operating system with fail-safe firmware updates
  - Virtual machine for vendor firmware
- Embedded bi-color red/greenLED for status indication
- Embedded phototransistor for our patent-pending BlinkUp optical configuration technology
- 6 user selectable I/Os
  - GPIO, PWM, Analog input & output
  - SPI (2 channels), UART (3 channels), I2C (2 channels)
- Low power 6uA sleep mode
- FCC, CE, IC C-Tick certified

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2. imp terminology

Term	Description
API	The Application Programming Interface through which imp scripts may access hardware and cloud functions
BlinkUp	Our patent-pending optical programming process for commissioning an imp using a smart device (phone or tablet)
Commissioning	Initializing an imp by associating it with a user account and WiFi credentials, usually via BlinkUp
electric imp	http://electricimp.com/aboutus/ (lower case by brand convention)
Planner	The imp cloud service which provides for the connection and configuration of imps and gateway communication with other devices
Registration	The process by which an imp card or module becomes associated with host hardware
Server	The electric imp cloud service with which imps communicate
Firmware	Vendor provided code that runs within the imp's virtual machine
Agent	Vendor provided code that runs within the imp service

3. Pin assignments

Back view (gold fingers facing up)
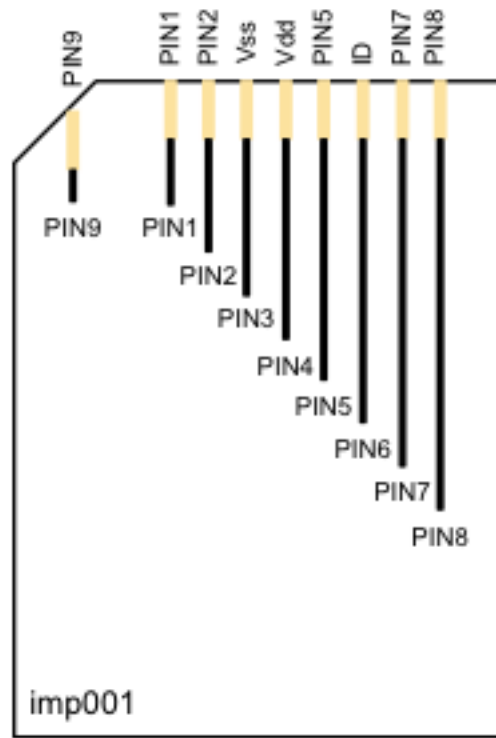
4. Pin description

Pin number	Pin name	Description
3	Vss	Ground
4	V_{DD}	Power input
1, 2, 5, 7, 8 & 9	PIN1,2,5,7,8 & 9	I/O, please refer to Pin mux table
6	ID	Connects to the Atmel ATSHA ID chip

5. Pin mux

In addition to acting as a GPIO, each pin on the imp001 can be configured to one of several specialized functions. While pins may only have one function at a time, they may be reconfigured during run-time to change function as needed. For example, a pin may first be configured as a DAC and then reconfigured as an ADC. Additionally, not all the pins in a hardware function need to be assigned to that function. For example, pins 8 and 9 could be used as UART and pins 1 and 2 could be used as I2C.

All I/O pins are initially tri-stated.

The imp001 can be woken from low power sleep mode with a rising edge on PIN1. If this signal is pulsed, the minimum pulse width is 20ms.

Pin	GPIO	UART	I2C	SPI	DAC	ADC	PWM	Pulse Count	Wake
PIN1	Yes	U1-CTS, U3-TX	I1-SCL	SPI1-SCLK	Yes	Yes	Yes	Yes	Yes
PIN2	Yes	U1-RTS, U3-RX	I1-SDA	SPI2-MISO		Yes	Yes		
PIN5	Yes	U2-TX		SPI2-SCLK	Yes	Yes	Yes		
PIN7	Yes	U2-RX		SPI2-MOSI		Yes	Yes		
PIN8	Yes	U1-TX	I2-SCL	SPI1-MOSI		Yes	Yes		
PIN9	Yes	U1-RX	I2-SDA	SPI1-MSO		Yes	Yes		

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7. Electrical characteristics

Parameter	Condition	Min	Typ	Max	Unit.
Operating temperature		-20		55	°C
V_{DD}	Operating voltage	1.8[1]	3.3	3.6	V
I_{DD}	Normal operation, WiFi on		80	400[2]	mA
	Normal operation, WiFi power-save mode enabled		5	400[2]	mA
	WiFi is off, processor sleep, RTC on, nvram preserved		6		µA
V_{IH}	I/O input high level voltage	$0.7V_{DD}$		3.6	V
V_{IL}	I/O input low level voltage	$V_{SS}-0.3$		$0.3V_{DD}$	V
I_{OUT}	Maximum current drive on I/O pins	-4		4	mA
I/O input leakage current	$V_{SS} \leqq V_{IN} \leqq V_{DD}$			4	µA
Load capacitance	Pins 1 to 9		20		pF

[1] WiFi requires 2.5v minimum for operation, but user code can run at 1.8v. The POWER_EN pin is driven to enable an external boost converter that will provide 2.5v+ during WiFi usage.

[2] 400mA current is during worst-case TX events. These are a maximum of ~4.8ms long (802.11b 1Mbps)
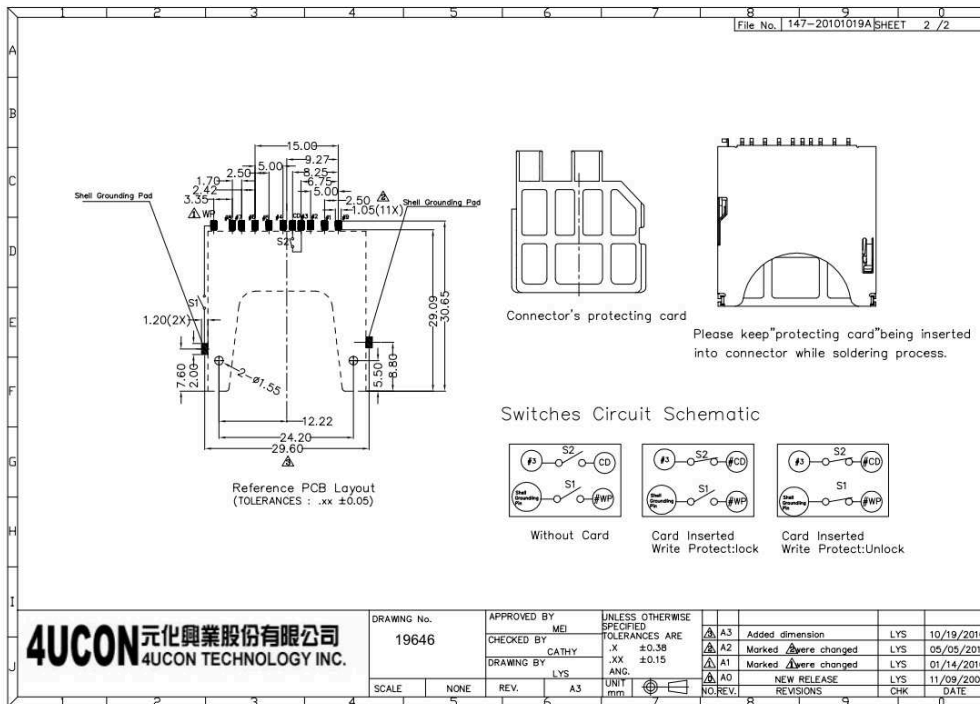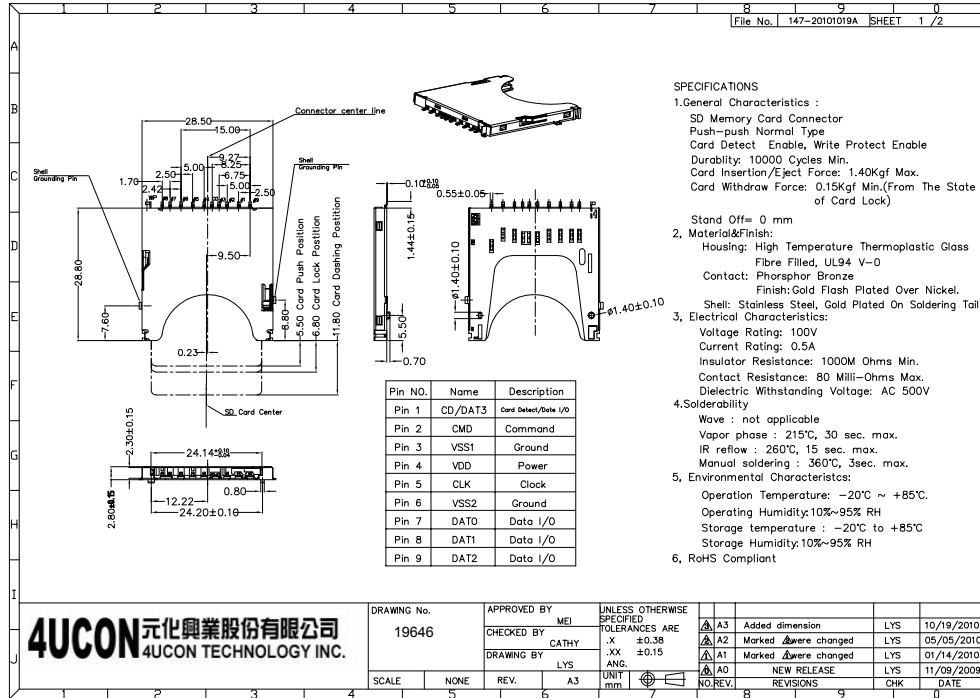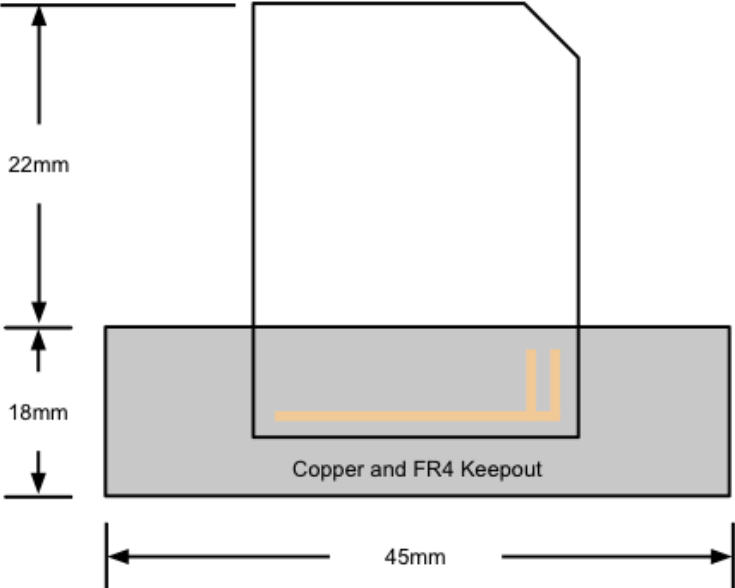
8. Package outline
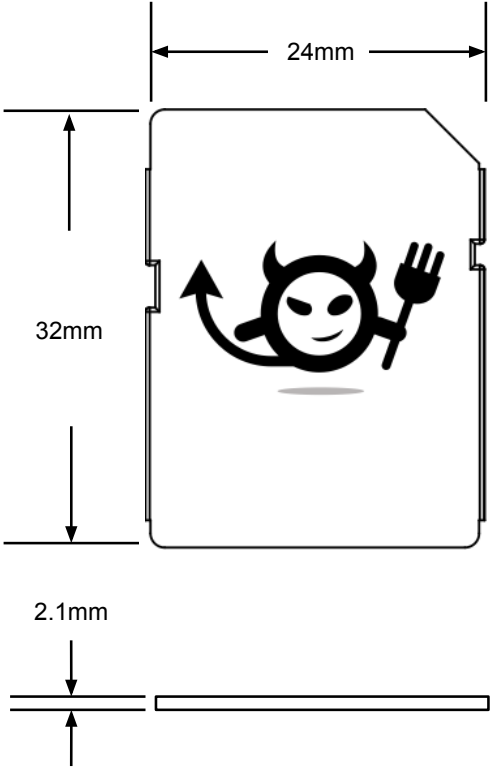
9. Recommended socket

Manufacturer = 4UCON

Part number = 19646

10. Layout recommendations

Version	Change description
20130419	added recommended layout
20130611	update electrical characteristics table